DOCUMENT RESUME

ED 187 004 EA 012 672

AUTHOR Graesser, Cheryl C.
TITLE Bargaining Process and Outcomes for Teams and Individuals: An Experimental Investigation.
PUB DATE Apr 80
NOTE 28p.: Paper presented at the Annual Meeting of the American Educational Research Association (Boston, MA, April 7-11, 1980).

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Collective Bargaining: *Graphs: *Group Dynamics: *Individual Characteristics

ABSTRACT

Most of the research on bargaining has focused on individuals bargaining against other individuals. This paper discusses two experiments in which the bargaining processes and outcomes of bargaining teams were compared to those of individual bargainers. Individuals bargained against a single other in the first experiment, while a two-person team bargained against a single other in the second experiment. The bargaining issues were defined by a set of continuous profit graphs that had three levels of slope: steep, medium, and shallow. In each experiment, a design was used whereby each of 18 same-sex bargaining units reached nine decisions based on a factorial presentation of the three profit slopes. Results indicated no significant differences between teams and individuals in either the obtained outcomes or the bargaining process. The paper concludes that for collective bargaining, the characteristics of an individual bargaining representative may be more crucial than the size of a bargaining team. (Author)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

C. Graesser

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

ED187004

BARGAINING PROCESS AND OUTCOMES FOR TEAMS AND INDIVIDUALS: AN EXPERIMENTAL INVESTIGATION

Cheryl C. Graesser
Evaluation and Training Institute

Most of the research on bargaining has focused on individuals bargaining against other individuals (see reviews by Chertkoff & Esser, 1976; Rubin & Brown, 1975). In contrast, very little investigation has been conducted on the effects of bargaining teams. The few existing studies of the social dynamics within bargaining teams have tended to be case studies such as those described in Ikle (1964) and Morley and Stephenson (1977). While case studies are often enlightening, the generalizability of their observations is, as always, open to question. The lack of systematic experimental research on bargaining teams is rather surprising in this era of increasing emphasis on collective bargaining and team conducted negotiations.

A logical starting point is the direct comparison of bargaining teams with individual bargainers. This situation is especially interesting, since the overwhelming majority of research in social psychology suggests that the team will obtain a more favorable outcome simply because of their larger numbers. This follows the general line of research on the effects of group

Paper presented at the American Educational Research Association annual conference, Boston, April 7-11, 1980.

This material is based upon research supported by National Science Foundation Grant GS-36918 to Norman H. Anderson at the University of California, San Diego. The author would like to thank Steve Paul for his assistance in collecting the data in Experiment 2.

EA 012 672

size, which has consistently indicated that as group size increases up to a point, the social pressure exerted by the group increases (Asch, 1956; Hare, 1976). In a group decision making setting, this increase in social pressure has been found to lead to more favorable outcomes for the larger group (Graesser, 1978).

To understand how the outcomes were obtained, it is necessary to examine the bargaining process, which is the exchange of offers that occurs before agreement is reached. This process is usually described in terms of "toughness", where one indicator of a tough bargaining strategy is that the bargainer makes only small concessions between successive offers. Two lines of research suggest that teams will use a tougher bargaining strategy than individuals.

The effect on bargaining strategy of bargaining as a representative for some constituent has been compared with bargaining as an individual. The usual finding is that representatives of a team use a tougher bargaining strategy than nonrepresentatives (e.g. Benton & Druckman, 1974; Lamm & Kogan, 1970; Wall, 1975). Thus if serving as a representative to a team increases bargaining toughness, similar dynamics may operate on each team member to increase the bargaining toughness of a team as a whole.

Since members of the bargaining team will discuss each offer, the research on group discussion effects is also quite relevant. Group discussion has been found to polarize the dominant tendency in a situation, be it toward conservatism or risk (see review by Lamm & Myers, 1978). In the bargaining process, the strongest tendency is likely to be toward making small conces-

sions, so that discussion of the next offer between team members should lead to smaller concessions than those made by individual bargainers (e.g. Lamm & Sauer, 1974).

In order to examine these expected effects of teams on the bargaining process, the bargaining task must allow for an exchange of offers. Most studies of bargaining use some modification of Siegel and Fouraker's (1960) Bilateral Monopoly task. This task requires the presence of two parties who negotiate the price and quantity for the sale of hypothetical merchandise. Each bargainer has a table depicting his or her available profits at each combination of price and quantity, where the two bargainers' profits are inversely related. Many researchers have restricted the bargaining process by fixing the quantity and permitting the bargainers to exchange offers in terms of price only. This procedure does allow for the measure of the number of concessions or offers exchanged before agreement (e.g. Komorita & Esser, 1975; Liebert, Smith, Keiffer & Hill, 1968), and the amount, in terms of potential profit, conceded between the first and last offer (e.g. Chertkoff & Conley, 1967; Esser & Komorita, 1975; Hinton, Hamner & Pohlen, 1974). The actual size of each concession, though, is not measurable, since the profit tables restrict the offers to the listed set of prices.

To examine the bargaining process as well as the outcome, the present experiments introduced a new bargaining task. Basically, the bargainer's profits were presented on a continuous line graph, which allowed the bargainer to freely select the concession size and rate. It was expected that teams would ob-

tain more favorable outcomes than individual bargainers, and that the teams would make smaller concessions, hence requiring more exchanges of offers before agreement, than individuals.

To explore the effects of the bargaining task on the bargaining process, the slope of the profit graphs was varied so that some graphs depicted a steep drop in profits as price increased and others depicted a relatively shallow profit decline. It was hypothesized that the slope of the profit graph would affect the bargainers' offers in the following manner. Bargainers with a steep profit graph were expected to adopt a much tougher bargaining stance, by making smaller concessions, since their available profits decreased sharply within a small range of prices or outcome alternatives. This tougher bargaining stance was expected to require more exchanges of offers before agreement and to lead to more favorable outcomes (e.g. Bartos, 1974; Holmes, Throop & Strickland, 1971; Siegel & Fouraker, 1960). Conversely, bargainers with a shallow profit graph, where the available profits were relatively constant across the entire price or outcome range, were expected to make larger concessions, and therefore need fewer exchanges of offers to reach agreement. These larger concessions should lead to a less favorable outcome, where favorability is defined as the distance in alternatives from the alternative yielding the maximum profit.

Thus, bargaining teams were expected to obtain more favorable outcomes and to make smaller concesssions than individual bargainers, and bargainers with steep profit graphs were expected to make smaller concessions, exchange more offers before agree-

ment, and obtain more favorable outcomes than bargainers with shallow profit graphs.

The present study describes two experiments in which bargaining pairs were asked to reach a series of agreements on hypothetical issues. In Experiment 1, individuals bargained one against the other; in Experiment 2, a team of two subjects bargained against a single other. The procedure and stimuli used in both experiments were identical.

Method

Experiment 1

Design. One subject in each pair received the profit graphs of bargainer A in Figure 1, while the other subjects received the graphs of bargainer B. As shown in Figure 1, there were three possible slopes for each bargainer's profit graphs: steep, medium, and shallow. The graphs were defined so that the point of maximum profit was at opposite ends of the alternative range for each bargainer. The slopes of the profit graphs were symmetrical for both bargainers. The numerical scale for the decision alternatives was shifted for each decision, but the distance between the points of maximum profit was held constant at 30.

Insert Figure 1 about here

Each bargaining pair reached nine decisions which were derived from a factorial presentation of the three profit graph

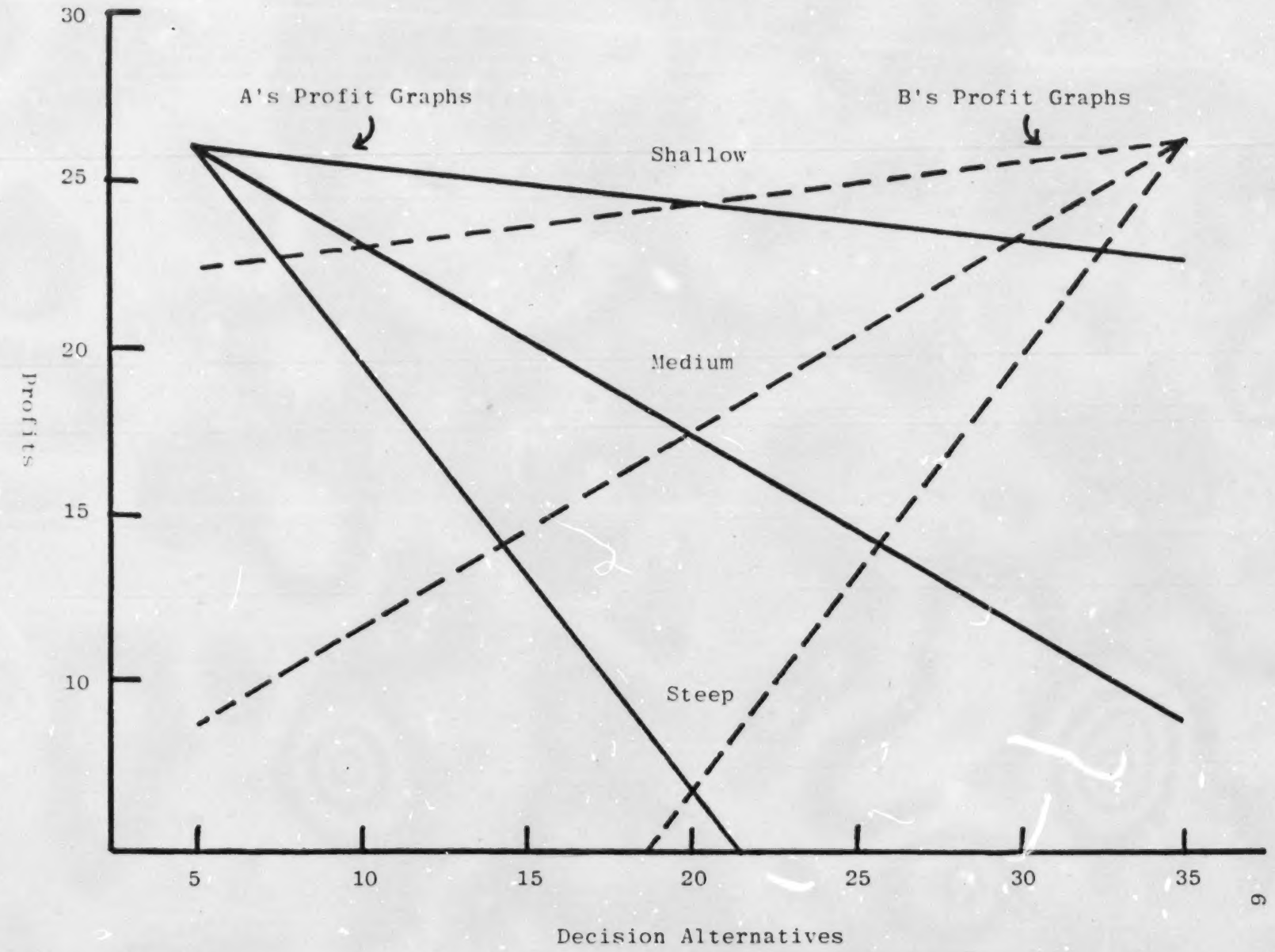

Figure 1. Profit graphs of bargainers A and B, showing the three levels of slope.

slopes to bargainers A and B. The presentation order was balanced by three 3 x 3 Latin squares. Each combination of profit graph slopes to A and B appeared once in each serial position. Two bargaining pairs were run through each of the nine presentation sequences generated.

Each bargaining pair made two practice decisions before, and one terminal decision after the nine main design decisions. The practice decisions insured that the subjects were reading the profit graphs correctly. The terminal decision was included to eliminate from the main design any attempts by subjects to "get even" on the last decision.

Procedure. Bargaining pairs were seated at opposite ends of a table which was divided in half by a partition. The partition enabled each subject to see the other's face, but not the other's profit graph. The experiment was described to the subjects as a study of decision making where each member wanted to get the most profit he could for himself. The bargaining issue was left undefined, but to encourage involvement in the task, subjects were told their earned profits would be computed at the end of the experiment. No such tally was actually made.

First, the subjects were shown how to read and use the profit graphs. Each subject then received a booklet containing all of the profit graphs used during the experiment. The cover sheet was a set of specific bargaining instructions, which the experimenter read aloud while the subjects followed along silently. Briefly, the subjects were told to start the bargain-

ing by making offers, or suggesting possible decision alternatives. The first offer made by the subject had to be the decision alternative giving him the most profit. Offers could not be retracted but they could be repeated twice. The subjects could not tell the other bargainer exactly what their profits were, and agreement could be reached at any point, not necessarily a whole number, along the decision axis. The size of concession on each offer was completely determined by the subject. Although the subjects did make a series of agreements, they were instructed that each decision was to be reached independently of the previous agreements, and that they could not make deals based on past or future decisions.

A typical exchange would open with bargainer A offering 5, and bargainer B offering 35, to set the ends of the bargaining range. Bargainer A would then have to make a counteroffer, for example, of 10, and B might counter with an offer of 32. The exchange of offers continued until agreement was reached on one alternative. The actual exchanges of offers were quite animated, with most subjects showing a great deal of enthusiasm and interest in the bargaining. Since the issues were not defined, however, the numerical decision alternatives exchanged as offers had no intrinsic meaning.

Subjects were asked to record not only the final agreement, but also the sequence of offers made before reaching agreement. Space was provided in the booklets for subjects to write their own offers. The experimenter monitored the two initial prac-

ice decisions, and thereafter each bargaining pair worked at their own pace.

Subjects. Subjects were 36 male undergraduates fulfilling a course requirement in introductory psychology at the University of California, San Diego. The 18 pairs were run separately in sessions lasting about 1 hour.

Experiment 2

The same design and stimuli used in Experiment 1 was used with bargaining teams. The two member team received the profit graphs of bargainer A in Figure 1; the single bargainer received the profit graphs of B.

In the bargaining process, no formal assignment of spokesperson was made in the two person team. The experimenter stressed the importance of the two persons working together as a team when making all decisions and offers. Typically, the two members would point out to each other where on their profit graph they felt the next offer should be made in order to reach agreement between themselves before making the offer to their opponent.

Subjects. Subjects were 27 male and 27 female undergraduates fulfilling a course requirement in introductory psychology at the University of California, San Diego. Eighteen triads composed of same sex subjects were run separately in sessions lasting about 1 hour.

Results

Obtained Agreements. Since the numerical scale itself had no effect, in all data analyses the maximum profit point of A was set at 5 and the maximum profit point of B was set at 35. The mean agreements, in terms of the decision alternatives, reached by individuals bargaining against individuals in Experiment 1 are shown in the left columns of Table 1 for each profit graph combination. As can be seen from the table, the slope of the profit graph had the expected effect on the favorability of the bargaining outcome: the steeper the profit graph slope, the closer the average decision point was to the bargainer's point of maximum profit. A two-way analysis of variance substantiated the observed differences among the levels of slope for bargainer A, $F(2, 34) = 38.88$, and for B, $F(2, 34) = 30.58$. As was expected with equivalent slopes for A and B, the interaction was not significant, $F(4, 68) = 2.17$.

Insert Table 1 about here

The profit graph slopes had a similar effect in Experiment 2, where the two-person teams bargained against an individual. Since there was no effect of sex on the obtained agreements, the data from Experiment 2 was pooled across sex in all analyses. The mean agreements, shown in the right columns of Table 1, reflect the same pattern of more favorable outcomes to the bargaining unit with the steeper profit graph. Once again, analysis of variance indicated large main effects for the different profit

TABLE 1

Mean Decisions as a Function of the Profit Graph Slopes of Each Bargainer, Experiments 1 and 2

Experiment 1

Profit Slopes of Individual Bargainer B (maximum profit at 35)		Profit Slopes of Individual Bargainer A (maximum profit at 5)		
		Steep	Medium	Shallow
	Steep	20.4	23.1	24.6
	Medium	17.3	19.8	21.9
	Shallow	14.8	18.2	20.2

Experiment 2

Profit Slopes of Individual Bargainer (maximum profit at 35)		Profit Slopes of Two-Person Teams (maximum profit at 5)		
		Steep	Medium	Shallow
	Steep	18.2	20.9	20.7
	Medium	17.0	18.4	20.7
	Shallow	15.1	17.0	18.7

slopes of the team, $F(2, 34) = 17.33$, and the individual bargainer, $F(2, 34) = 10.27$, with a nonsignificant interaction, $F(4, 68) = 0.94$.

In neither experiment were the agreements affected by the order in which they were reached. One-way analysis of variance of the nine serial positions indicated no effects in either Experiment 1, $F(8, 136) = 0.45$, or Experiment 2, $F(8, 136) = 1.29$.

Of primary interest here was the comparison of the agreements reached by teams bargaining against individuals with the decisions obtained by two individuals bargaining against each other. A visual inspection of the means in Table 1 reveals a slight trend for the two-person teams of Experiment 2 to obtain agreements closer to their point of maximum profit at 5, especially when the team had a steep profit slope. However, a direct comparison of agreements reached in Experiments 1 and 2 was nonsignificant, $F(1, 34) = 3.18$.

Concession Size. Since the continuous profit graph allowed each bargainer to completely determine the next offer, the size and rate of concessions were examined in both experiments. The effects of profit graph slope on average concession size in Experiment 1 are shown in the left panel of Figure 2. Comparison of the average concessions of bargainer A and B revealed a slight trend for individuals with the profit graphs of B to make smaller concessions. Since this trend was nonsignificant, Figure 2 presents concessions averaged across all bargainers in Experiment 1. In the figure, offer 1 is the first offer immediately following the required initial offer of the point of maximum profit.

Insert Figure 2 about here

As can be seen in Figure 2, the mean concession size is smaller with steep profit slopes and larger with shallow profit slopes. This difference gradually becomes smaller as the number of offer exchanges increases, until after the fifth exchange, the effect of slope is negligible. This diminishing effect of profit slope is reasonable, since the distance in alternatives between the bargainers' last offers decreases with each successive exchange.

The mean concession sizes in Experiment 2 are shown in the right panels of Figure 2 separately for the two-person team and the individual bargainer. The profit graph slopes had the same effects as in Experiment 1, with smaller concessions with steep slopes. A visual comparison of the concessions of individuals and teams reveals a trend for teams to make smaller concessions. Once again, however, a direct comparison was nonsignificant.

Offer Exchanges. It was hypothesized that more exchanges of offers would be required before agreement when the bargainers had steep profit slopes. This was indeed the case in both experiments, as can be seen in Table 2. The means in the table represent the average number of exchanges of offers, including repeated offers.

Insert Table 2 about here

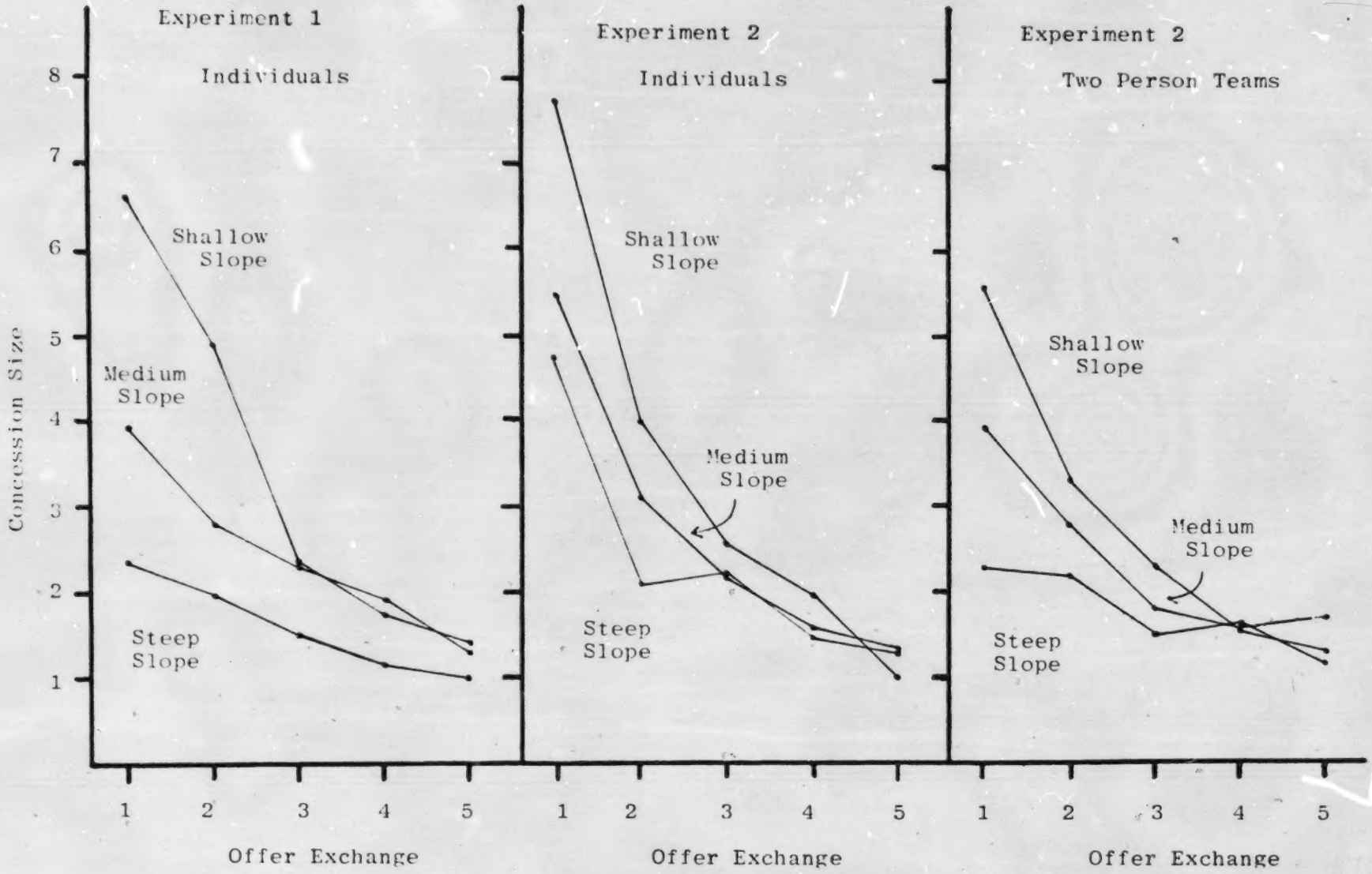

Figure 2. Mean concession size for each profit graph slope in the first five offer exchanges, Experiments 1 and 2.

TABLE 2

Mean Number of Offer Exchanges before Agreement as a Function of Profit Graph Slopes of Each Bargainer, in Experiments 1 and 2

Experiment 1

Profit Slopes of Individual Bargainer B		Profit Slopes of Individual Bargainer A: Steep	Medium	Shallow
	Steep	19.4	15.9	11.6
	Medium	14.4	10.2	7.6
	Shallow	10.2	7.9	6.6

Experiment 2

Profit Slopes of Individual Bargainer		Profit Slopes of Two-Person Teams: Steep	Medium	Shallow
	Steep	14.4	12.5	9.8
	Medium	14.9	10.2	10.8
	Shallow	10.2	9.1	8.5

The steeper a bargainer's profit slope, the more offers before agreement; the shallower the profit slope, the fewer offers needed. These observed differences were substantiated in Experiment 1 by significant main effects for the slopes of bargainer A, $F(2, 34) = 17.12$, and bargainer B, $F(2, 34) = 13.45$, with no interaction, $F(4, 68) = 1.62$. Similar results were obtained in Experiment 2, with significant main effects for the profit slopes of the team, $F(2, 34) = 7.28$, and the individual, $F(2, 34) = 4.47$, with no interaction, $F(4, 68) = 0.99$.

A comparison of the overall number of offer exchanges in Experiments 1 and 2, however, revealed no differences due to the presence of bargaining teams, $F(1, 34) = 0.02$. Furthermore, there were no order effects for offer exchanges across the nine decisions in either Experiment 1, $F(8, 136) = 0.69$, or Experiment 2, $F(8, 136) = 1.91$).

Since subjects were permitted to repeat an offer twice, the effect of profit slope on the use of repeated offers was examined for further insight into the exchange process. As can be seen in Table 3, the average number of repeats was greater in decisions involving steep slopes and smaller in decisions with shallow slopes. There was, however, no significant difference in the use of repeated offers between Experiments 1 and 2, $F(1, 34) = 1.10$.

Insert Table 3 about here

TABLE 3

Mean Number of Repeated Offers as a Function of the Profit Graph Slopes of Each Bargainer, Experiments 1 and 2

Experiment 1

Profit Slopes of Individual Bargainer B	Profit Slopes of Individual Bargainer A: Steep	Medium	Shallow
Steep	10.4	6.0	3.3
Medium	8.6	4.0	1.8
Shallow	5.0	1.7	1.2

Experiment 2

Profit Slopes of Individual Bargainer	Profit Slopes of Two-Person Teams: Steep	Medium	Shallow
Steep	9.3	7.3	5.4
Medium	11.3	6.2	7.1
Shallow	6.2	5.7	5.2

Discussion

The major effect was that of the profit graph slopes on the bargaining process and on the outcome. With steep slopes, both the teams and individuals made smaller concessions, used more repeated offers, exchanged more offers, and ultimately obtained more favorable agreements. The profit slope was thus a direct determinant of bargaining toughness. In this case, toughness was not affected by the total amount of available profits, but rather by the rate of change in profits.

The systematic variation in profit slope revealed that the effectiveness of a tough bargaining stance is completely dependent on the responding bargaining stance of the opponent. In the six decisions where bargainers had a steeper profit slope than their opponents', a tougher strategy was consistently used to obtain a more favorable outcome. However, in the three decisions where the opposing bargainers had equivalent slopes, the concession strategies of both parties also matched, leading to a neutral agreement in the center of the alternative range. Thus when both bargainers adopted the same bargaining stance, be it tough or not, the outcomes were the same.

The expected difference in outcomes and bargaining process between individual and team bargainers did not appear in any measure. On the theoretical level, perhaps a two person team simply did not exert 'enough' social pressure, possibly because many of the usual social pressure mechanisms, such as threats, were not permitted. An alternative explanation is that social pressure due to sheer number of participants on a side is not

applicable in a bargaining situation.

A bargaining situation requires the presence of at least two parties with opposed preferences, who must reach agreement and who do so by an exchange of offers (Rubin & Brown, 1975). As long as an agreement must be reached, each bargaining party is functionally equivalent in power, in the sense that if either party refuses to negotiate, no agreement can be reached. Thus bargaining power is equivalent to each side, regardless of size. This concept of relative power has been used extensively by Schelling (1960) in his analysis of conflict strategies between two countries. In examples, he points out that as long as an agreement must be reached, it matters not whether the bargaining parties are the United States and the Soviet Union or the United States and Panama; both sides are functionally equal in situational power.

The concept of equal power rests on the assumption that the two parties must reach agreement, as was required in this experimental setting. In actual practice, one party usually has a stronger interest in obtaining agreement than the other, which effectively shifts the bargaining power to the less interested party. The use of external pressures such as strikes or lockouts will also shift the power in actual settings.

On the methodological level, it should be noted that the lack of significant differences between individuals and teams was primarily due to the large variability between subjects. A close examination of the data revealed individual differences in bargaining persuasiveness or strength to be important. For

example, in both experiments some bargaining pairs never repeated offers, while others averaged over 25 repeats per agreement. In terms of outcome differences, the entire set of nine agreements reached by two bargaining parties in Experiment 1 were displaced toward the maximum profit points of 5 and 35 so that there was no overlap between the two. These are, of course, extreme examples but they do serve to indicate the extent of individual differences in persuasiveness.

For collective bargaining, then, the characteristics of an individual bargaining representative may be more crucial than the size of a bargaining team. The present results clearly indicate that a bargaining team does not gain any advantage in terms of social pressure by virtue of its size.

References

Asch, S. E. Studies of independence and conformity: I. A minority of one against a unanimous majority. Psychological Monographs, 1956, 70 (9, Whole No. 416).

Bartos, O. J. Process and outcome of negotiations. New York: Columbia University Press, 1974.

Benton, A. A. & Druckman, D. Salient solutions and the bargaining behavior of representatives and nonrepresentatives. International Journal of Group Tensions, 1973, 3, 28-39.

Chertkoff, J. M. & Conley, M. Opening offer and frequency of concession as bargaining strategies. Journal of Personality and Social Psychology, 1967, 7, 181-185.

_____ & Esser, J. K. A review of experiments in explicit bargaining. Journal of Experimental Social Psychology, 1976, 12, 464-486.

Esser, J. K. & Komorita, S. S. Reciprocity and concession-making in bargaining. Journal of Personality and Social Psychology, 1975, 31, 864-872.

Graesser, C. C. A social averaging theorem for group decision making (Doctoral dissertation, University of California at San Diego, 1978).

Hare, A. P. Handbook of small group research (2nd ed.). New York: Free Press, 1976.

Hinton, B. L., Hamner, W. C. & Pohlen, M. F. The influence of reward magnitude, opening bid and concession rate on profit earned in a managerial negotiation game. Behavioral Science, 1974, 19, 197-203.

Holmes, J. G., Throop, W. F. & Strickland, L. H. The effects of prenegotiation expectations on the distributive bargaining process. Journal of Experimental Social Psychology, 1971, 7, 582-599.

Ikle, F. C. How nations negotiate. New York: Harper and Row, 1964.

Komorita, S. S. & Esser, J. K. Frequency of reciprocated concessions in bargaining. Journal of Personality and Social Psychology, 1975, 32, 699-705.

Lamm, H. & Kogan, N. Risk taking in the context of intergroup negotiation. Journal of Experimental Social Psychology, 1970, 6, 351-363.

_____ & Myers, D. G. Group-induced polarization of attitudes and behavior. In L. Berkowitz (Ed.), Advances in experimental social psychology (Vol. 11). New York: Academic Press, 1978.

_____ & Sauer, C. Discussion-induced shift toward higher demands in negotiation. European Journal of Social Psychology, 1974, 4, 85-88.

Liebert, R. M., Smith, W. P., Keiffer, M. & Hill, J. H. The effects of information and magnitude of initial offer on interpersonal negotiation. Journal of Experimental Social Psychology, 1968, 4, 431-441.

Morley, I. E. & Stephenson, G. M. The social psychology of bargaining. London: George Allen & Unwin Ltd., 1977.

Rubin, J. Z. & Brown, B. R. The social psychology of bargaining and negotiation. New York: Academic Press, 1975.

Schelling, T. C. The strategy of conflict. Cambridge, Massachusetts: Harvard University Press, 1960.

Siegel, S. & Fouraker, L. E. Bargaining and group decision-making. New York: McGraw-Hill, 1960.

Wall, J. A. Jr. Effects of constituent trust and representative bargaining orientation in intergroup bargaining. Journal of Personality and Social Psychology, 1975, 31, 1004-1012.